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A New Species of *Schizæaceæ* from Bonin-Islands,
together with the Conspectus of families and
genera of *Schizæaceous* Plants.

by

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中井猛之進：小笠原島産ふさしだ科ノ新種トふさしだ科類似植物ノ新分類

In Japan two species of *Schizæa* have hitherto been recorded; one from Bonin Islands as *Schizæa digitata*⁽¹⁾, the other from the Liukiu Archipelago as *Schizæa Kikuzatonis*⁽²⁾. The former belongs to the genus *Actinostachys* WALLICH and the latter to the genuine *Schizæa*. The *Schizæa* of Bonin, however, differs from the real *Schizæa digitata*,⁽³⁾ or *Actinostachys digitata* WALLICH,⁽⁴⁾ or *Acrostichum digitatum*⁽⁵⁾ which had been previously described by LINNÆUS in *Flora Zeylanica*⁽⁶⁾ and *Amœnitates Academicæ* I, and also by HERMANN and BURMANN.⁽⁷⁾ The fertile segments on each frond which are disposed dichotomo-digitately, are far numerous (13-30) but shorter by 2-5 times than

⁽¹⁾ *Schizæa digitata* Sw. : KUNZE in Bot. Zeitung VI, 493 (1848), et auct. plur.

⁽²⁾ *Schizæa Kikuzatonis* OGATA in ASAHINA, Journ. Jap. Bot. XI, 36 f. 6 (1935); Icon. Filic. Jap. VII, t. 346 (1936).

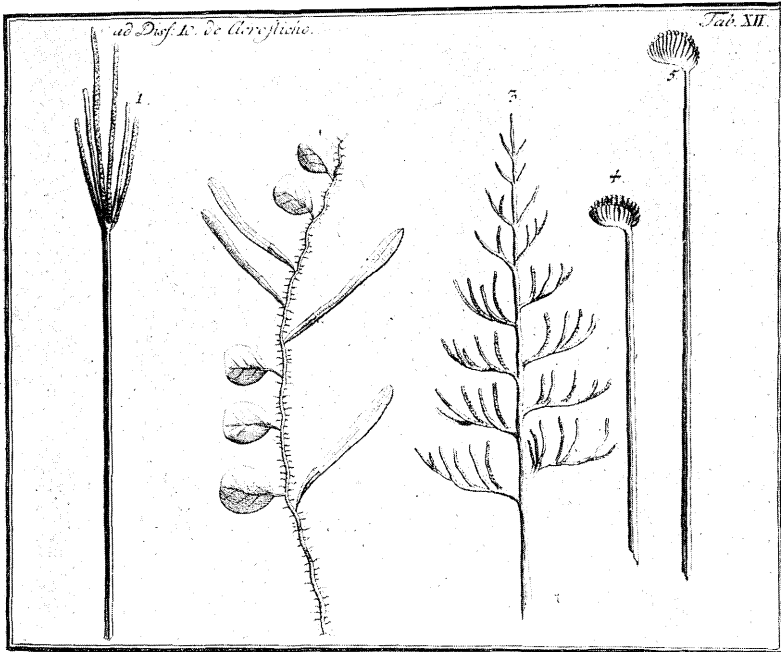
⁽³⁾ *Schizæa digitata* (L.) SWARTZ in SCHRADER, Journal für die Botanik, zweiter Band, 1800, 102 (1801); Synopsis Filic. 150 & 380, t. IV, f. 1 (1806).

⁽⁴⁾ *Actinostachys digitata* (L.) WALLICH, Catal. no. 1 (1828), nom.; J. SMITH in HOOKER, London Journ. Bot. II, 285 (1843).

⁽⁵⁾ *Acrostichum digitatum* L. Sp. Pl. ed. 1, 1063 (1753).

⁽⁶⁾ *Acrostichum caulibus triquetris, fronde digitata breve lineari integerrima æquali*, LINNÆUS, *Flora Zeyl.* 180, n. 379 (1747); *Amœnitates Academicæ* I. 269 t. XII, fig. 1 (1749).

⁽⁷⁾ *Planta pluribus foliis triquetris, instar Graminis Cyperini summitate foliorum in plurima folia biuncialia divisis*, HERMANN, *Museum Zeylanicum* 27 (1717); J. BURMANN, *Thesaurus Zeylanicus* 194 (1737).



第 1 圖 「リネウス」氏著 *Amœnitates Academicæ* 第 1 卷第 XII 圖ヲ約 1/2 大ニ縮寫ス。1 ハ今日フ *Schizæa digitata*, 2 ハ *Drymoglossum heterophyllum*, 3 ハ *Ceratopteris thalictroides* みづわらび, 4, 5 ハ *Schizæa pectinata* デアル。之ガ *Schizæa digitata* ノ圖ノ出タ最初ノモノデアル。

FIG. 1. A copy of the table affixed to LINNÆUS' *Acrostichum* in *Amœnitates Academicæ* I. (reduced to 1/2).

in *Actinostachys digitata* (commonly 8–40 mm long) and more slender (about 1 mm wide). The sorus is destitute of paraphyses. It likes humous soil, and is especially frequent in the virgin forest at Takeda-Bokudjô and on Mt. Asahi-yama in the Titizima Island (or Peel Island). I shall call it as *Actinostachys boninensis*.

***Actinostachys boninensis* NAKAI, sp. nov.**

Syn. *Schizæa digitata* (non SWARTZ) KUNZE in Bot. Zeit. VI, 493 (1848);
HOOKER & BAKER, Syn. Filic. ed. 1, 430 (1868), quoad pl. ex Bonin;
ed. 2, 430 (1874); MATSUMURA, Catal. Pl. Herb. Coll. Sci. Imp. Univ.
242 (1886), Shokubutsu Mei-I, 266 (1895); CHRIST, Farnkr. 344 (1897),
quoad pl. ex Bonin-Inseln; DIELS in ENGLER & PRANTL, Nat. Pflanzenfam. I Abt. 4, 363 (1898), quoad pl. ex Bonin-Inseln; MATSUMURA,

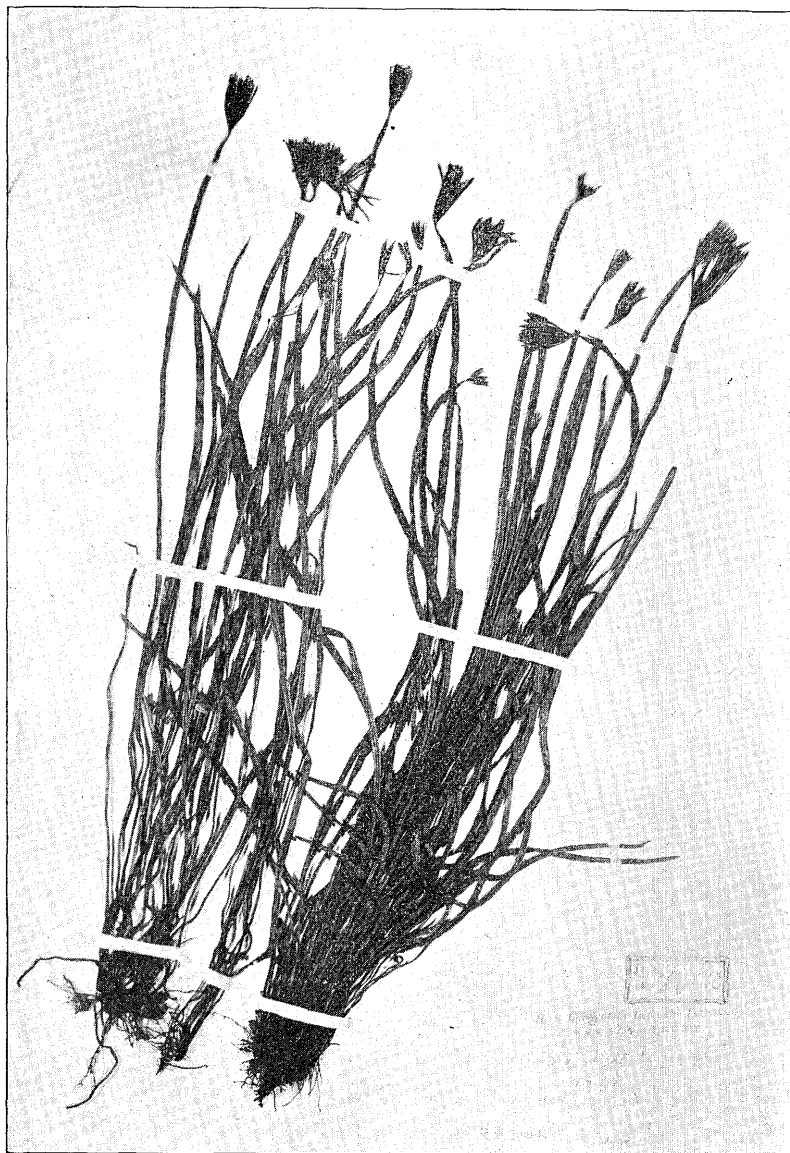
Ind. Pl. Jap. I 347 (1904); HATTORI in Journ. Coll. Sci. Tokyo XXIII art. 10, 18 (1908), CHRIST, Geograph. Farne 156 (1910), quoad pl. ex Bonin-Sima; KODAMA in MATSUMURA, Shokubutsu Mei-I, rev. & enlarg. ed. II, 520 (1916); MAKINO & NEMOTO, Fl. Jap. 1567 (1925); NAKAI in Rigakkwai XXVI, no. May 2 (1928); in Tokyo Bot. Mag. XLI, 689 (1927), excl. syn.; TOYOSHIMA, Ogasawarazima Kokuyûrin Shokubutsu Gwaikwan 127 (1929); in Ogasawara Sôran 303 (1929); MAKINO & NEMOTO, Fl. Jap. ed. 2, 115 (1931); TERAZAKI, Nippon Shokubutsu Dukwan fig. 2086 (1933); NEMOTO, Fl. Jap. Suppl. 79 (1936).

Rhizoma breve repens apice pilis castaneis rigidis caducis hispidum. Fron- des successive proxime collocati 13–40 cm alti erecti subspirales glabri, basi triquetres 1–2 mm lati castanei, ceteri plani virides 3–4 (5) mm lati, facie læves, margine integerrimi, supra costis impressis infra valde elevatis. Series stomatis in utroque latere costæ 1, conformatione Asplenioidæ.⁽¹⁾ Seg- menta fertilia terminali fasciculatim sed dichotome collocata, in quoque fas- ciculo 13–30, angusta 8–40 mm longa 1 mm lata, uno latere parce curvata, primo subteretia maturitate ventrali-longitudine rupsa. Sori non paraphy- sidiati. Sporangia secus segmenta 4–serialia sessilia ovoidea fusca 375–400 μ longa, sacco cum cellulis pellucidis oblongis crenato-marginatis longitudine 2–3 serialibus constituto, annulo terminale cum cellulis 13–15 constituto (8% pro 13, 60% pro 14, 32% pro 15). Sporæ oblongæ bilaterales 55–60 μ longæ, dorso convexæ longitudine multistriatæ.

Habitat in Bonin, grece Titizima vel Peel Isl.

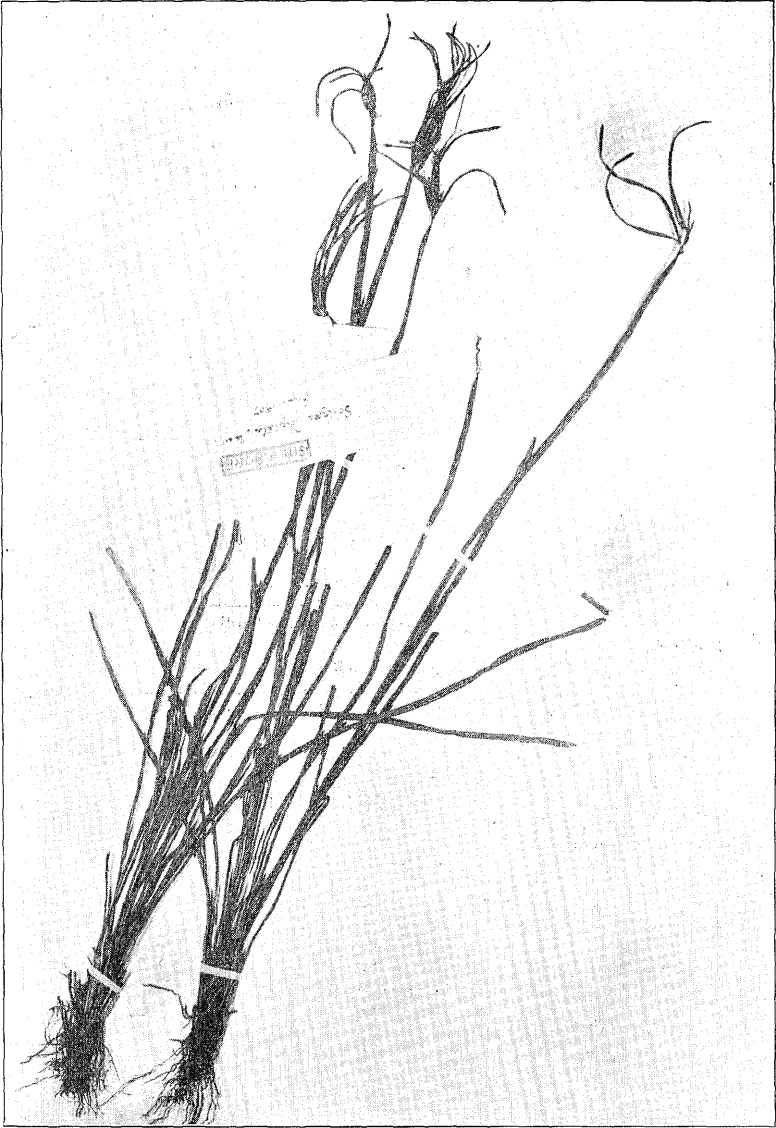
Insula Titizima : Takeda-Bokudjô (T. NAKAI, Jul. 1930—typus in herb. Univ. Imp. Tokyoensis); ibidem (Y. OGURA, Jan. 1925); ibidem (T. TUYAMA Jun. 1932, Aug. 1933, Apr. 1936); Kiyose (T. TUYAMA, Jun. 1932); Saiurayama (T. TUYAMA, Nov. 1935); in monte Asahiyama (H. HATTORI, Jul.-Aug. 1905); ibidem (T. NAKAI Jun. 1920); Rendjudani (S. NISHIMURA, Maio 1918); sine loco speciali (B. KAWATE, Dec. 1911); sine loco speciali (R. YATABE & J.

⁽¹⁾ T. KONDO: Ueber die anatomische Struktur und die taxonomische Bedeu- tung der Spaltöffnungen bei einigen Farnkräutern II *Schizæaceæ*, in Tokyo Bot. Mag. XLIII, 595–603 fig. 3–7 (1929).



第 2 圖 ふさしだノ基準標本ヲ約 $1/4$ = 縮寫ス。

Fig. 2. The type specimen of *Actinostachys boninensis*. ($1/4$ in size)



第 3 圖 *Schizæa digitata* ノ標本ヲ約 1/4 = 縮寫ス。
Fig. 3. Specimens of *Schizæa digitata* (1/4 in size).

MATSUMURA, Dec. 1879); idem (T. NAKADIMA, Dec. 1923).

Insula Anizima vel Buckland Isl. : in monte Mikaeriyama (H. HATTORI, Jul. 1905).

Actinostachys is a good genus differing from *Schizaea* by having simple triangular (not terete) fronds, terminated by clustered (not pinnate) fertile segments, upon which sporangia are arranged in four rows.

Schizæaceæ should be restricted to *Actinostachys* and *Schizaea*, *Lygodiaceæ* to *Lygoëium*, *Lygodictyon*, *Gisopteris*, and *Otontopteris*, and lastly *Aneimiaceæ* to *Aneimia*, *Anemidictyon*, *Anemiabotrys*, *Coptophyllum*, *Mohria*, and *Trochopteris*. Their distinctions are as follows.

(I) **Schizæaceæ** KAULFUSS, Wesen d. Farrenkr. 119 vel tab. syst. (1827), excl. *Mohria*, *Lygodium* et *Aneimia*; MARTIUS, Icon. Pl. Crypt. Brasil. I 112 (1828), excl. *Aneimia* et *Lygodium*; ENDLICHER, Gen. Pl. I 64 (1836), excl.

FILICES.		
I. Foliofac.	Lycopodiaceæ.	
	Lycopodium. Bernhardia.	
II. Frondifac.	A. Frons involvens (capfulac inornatae). Ophioglossaceæ.	
	Botrychium. Helminthostachys (<i>Botryopteris</i> PRÆSL.). Ophioglossum.	
B. Frons circumdata.	1. Capfulac epiphyllae inornatae. . . Marattiaceæ.	
	Marattia. Danaea. Angiopteris.	
	2. Capfulac epiphyllae ornatae.	
	a. Annulo spurio. Gleicheniaceæ.	
	Gleichenia. Mertenia. Platyzoma.	
	b. Gibbere reticulato dorsali. Osmundaceæ.	
	Todca. Osmunda.	
	c. Vertice striato. Schizæaceæ.	
	Mohria. Lygodium. Schizaea (<i>Lophidium</i> RICHT.). Aneimia.	
	d. Annulo vero centrali. Polypodiaceæ.	
	a. Nudae.	β. Indusio spurio tectae.
	γ. Indusio vero tecto.	

第4圖 *Schizæaceæ* ナル名ノ始メテ出タ「カウルフース」氏著 Das Wesen der Farrenkräuter (1827 年版) 附表ノ一部ヲ 2/3 大ニ寫ス。

Fig. 4. Part of the table suffixed to KAULFUSS' Das Wesen der Farrenkräuter, where the name *Schizæaceæ* appeared for the first time.

Aneimia, *Lygodium* et *Mohria*; PRESL, Suppl. 72 (1845), partim; METTENIUS, Filic. Hort. Bot. Lips. 113 (1856), pro parte; STURM in MARTIUS, Fl. Brasil. I, pt. 2, 169 (1859), excl. *Lygodium* & *Aneimia*; PRANTL, Schizæac. 58 (1881), partim; CHRIST, Farnkr. 344 (1897), partim.

Syn. *Osmundaceæ* R. BROWN, Prodr. Fl. Nov. Holland. 161 (1810), excl. *Osmunda* et *Lygodium*; BARTLING, Ord. nat. Pl. 18 (1830), pro parte.

Schizææ SCHRADER ex MARTIUS l.c. pro syn.

Schizææ HOOKER & GREVILLE, Icon. Filic. II ind. (1830), excl. *Lygodium* et *Aneimia*.

Osmundaceæ § 2. *Aneimieæ* HOOKER ex LINDLEY, Nat. Syst. Bot. 402 (1836), excl. *Aneimia* et *Lygodium*.

Filices subord. *Polypodiaceæ* Trib. XII. *Schizæaceæ* MEISSNER, Pl. Vasc. Gen. I 435 (1836), excl. *Lygodium*, *Mohria* et *Aneimia*.

Polypodiaceæ Trib. 6. *Schizæineæ* § 2. *Schizæææ* MOORE, Ind. Filic. I xii (1857), pro parte.

Filices sub-ord. IV. *Osmundaceæ* Trib. I. *Schizææ* J. SMITH, Ferns Brit. & Foreign 72 & 257 (1866) pro parte.

Filices subord. *Schizæaceæ* HOOKER & BAKER, Syn. Filic. I 428 (1868), pro parte.

Filices Trib. 26. *Schizææ* J. SMITH, Hist. Filic. 350 (1875).

Schizæaceæ I. *Schizæææ* DIELS in ENGLER & PRANTL, Nat. Pflanzenfam. I Abt. 4, 362 (1898).

Prothallium dioicum filamentosum hic illuc bulbos fungiferos surgit. Rhizoma breve repens cum protostelico vel solenostelico imperfecto. Frondes dichotome divisæ vel simplices, basi teretes vel triquetres. Stomata longitudine serialia Asplenioidea. Segmenta fertilia pinnata vel dichotome fasciculata subpalmata. Sporangia sessilia vel subsessilia erecta, annulo terminale uniseriale, membrano cellularum zigzagforme. Archisporæ successive divisæ ita sporæ bilaterales, oblongæ dorso longitudine multi-striatæ. Genera 2.

Frondes dichotome divisæ vel flabellatæ rarissime simplices, cum stipite terete. Segmenta fertilia pinnata. Sori non paraphysidiati. Sporangia 2-serialia.

- (1) **Schizæa**⁽¹⁾ J. E. SMITH in Mém. Acad. Turin V 419, t. 9 fig. 9 (1793; in RÖEMER, Archiv f. Bot. I pt. 2, 57, f. 9 (1797); in USTERI, Annal. d. Bot. XXIII, 106, t. II, fig. 7 (1799), etc.

Syn. *Lophidium* RICHARD in Actes Soc. Hist. Natur. Paris I, 114 (1792); PRESL, Suppl. 76 (1845).

Frondes simplices basi triquetres. Segmenta fertilia fasciculata falcata. Sori paraphysidiati vel eparaphysidiati. Sporangia 4-serialia.

- (2) **Actinostachys** WALLICH ex HOOKER, Gen. Filic. t. CXI, fig. A (1842); PRESL, Suppl. 73 (1845).

- (II) **Aneimiaceæ** LINK, Filic. Sp. Hort. Bot. Berol. 23 (1841), pro parte. Syn. *Schizæaceæ* KAULFUSS, Wesen d. Farrenkr. 119 (1827), excl. *Lygodium* et *Schizæa*; MARTIUS, Icon Pl. Crypt. Brasil. 112 (1828), excl. *Schizæa* et *Lygodium*; ENDLICHER, Gen. Pl. I 64 (1836), excl. *Schizæa* et *Lygodium*; STURM in MARTIUS, Fl. Brasil. I pt. 2, 169 (1859), excl. *Lygodium* & *Schizæa*; PRANTL, Schizæac. 58 (1881), partim; CHRIST, Farnkr. 344 (1897), partim.
- Osmundaceæ* R. BROWN apud PRESL, Reliq. Hænk. I 72 (1830), excl. *Lygodium*; BARTLING, Ord. Nat. Pl. 18 (1830), pro parte.
- Schizæa* HOOKER & GREVILLE, Icon. Filic. II in indice (1830), excl. *Schizæa* & *Lygodium*.
- Osmundaceæ* § 2. *Aneimiæ* HOOKER ex LINDLEY, Nat. Syst. Bot. 402 (1836), excl. *Lygodium* et *Schizæa*.
- Filices* subord. *Polypodiaceæ* Trib. *Schizæaceæ* MEISNER, Pl. Vase. Gen. I 485 (1836), excl. *Lygodium* & *Schizæa*.
- Polypodiaceæ* Trib. 6. *Schizæineæ* § *Schizææ* MOORE, Ind. Filic. I xii (1856), partim.
- Filices* subord. IV. *Osmundaceæ* Trib. 1. *Schizæa* J. SMITH, Ferns Brit. & Foreign 72 & 257 (1866), partim.
- Filices* subord. *Schizæaceæ* HOOKER & BAKER, Syn. Filic. I 428 (1868), partim.

⁽¹⁾ Although *Schizæa* is not adopted for nomen conservatum as yet, I still use this name instead of *Lophidium*, in order not to make superfluous new combinations.

Filices Trib. 26. *Schizææ* J. SMITH, Hist. Filic. 350 (1875), partim.

Schizæaceæ III. *Aneimieæ* DIELS in ENGLER & PRANTL, Nat. Pflanzenfam. I Abt. 4, 366 (1898).

Prothallium monœcium planum cum cellula apicali laterale, ita ellipticum vel oblongum. Rhizoma epigæum repens vel erectum, cum dictyostelico vel solenostelico perfecto. Frondes nunquam volubiles pinnatim decompositæ, vel rarius simplices. Stomata dispersa Aneimidoidea. Sporangia sessilia vel subsessilia, cum cellulis annulatis 1-2 serialibus, cellulis sporangii angulatis. Archisporæ simultane divisæ, ita sporæ tetrahedrales, facie magni-striatæ. Genera 6.

- 1 { Folia simplicia rosulata, dentata vel pinnatim sinuata, venis dichotome divis. Caudex erecta. Sporangia hypophylla supra venularum posita et in parte inferiore frondis predominata. Sporangia ovoidea. Sporæ angulato-tetrahedrales.
- (1) **Trochopteris** GARDNER in HOOKER, London Journ. Bot. I 74, tab. IV (1842); HOOKER, Gen. Filic. tab. CIV fig. A (1842).
Syn. *Aneimia* Presl, Suppl. 81 (1845), partim; STURM in MARTIUS, Fl. Brasil. I pt. 2, t. 16 (1859).
- 2 { Frondes pinnatim decompositæ, homomorphæ vel dimorphæ. 2.
Rhizoma erectum cum dictyostelico. Sporangia sphaerica subsessilia, supra venas vel prope margines concavos paginae inferiores inserta. Sporæ sphaerico-tetrahedrales. Folia bipinnata vel subtripinnata, nervis dichotome-pinnatis.
- (2) **Mohria** SWARTZ, Syn. Filic. 6 & 159 (1806).
- 3 { Rhizoma repens cum solenostelico. Sporangia sessilia ellipsoidea vel ovoidea. Sporæ angulato-tetrahedrales vel sphaerico-tetrahedrales. 3.
Sporophylla ut *Ophioglossum* ad basin laminarum lateralia paria, 1-tripinnata. Frondes 1-bipinnatæ. Sporæ angulato-tetrahedrales. 4.
Frondes dimorphæ, vel pinnae inferiores fertiles 5.
Pinnae nervis dichotomis. Frondes 1-2 pinnatæ.
- (3) **Aneimia** SWARTZ, Syn. Filic. 6 & 155 (1806).
Pinnae nervis reticulatis. Frondes 1-pinnatæ.

- 4) (4) **Anemidictyon** J. SMITH in Journ. Bot. n. ser. I ined. ex HOOKER, Gen. Filic. t. CIII (1842).

Syn. *Aneimidictyon* PRESL, Suppl. 91 (1845).

Fronde Asplenioides tripinnatæ, pinnis infimis fertilibus, lobis sterilibus pinnatinervis. Sporæ angulato-tetrahedrales.

- (5) **Anemiæbotrys** FÉE, Crypt. Vasc. du Brésil, Appendice 267, tab. LXXXVIII, fig. 2 (1869).

- 5) Fronde capillari-3-4-pinnatæ, fertiles ex sterilibus diversæ, vel pinnæ inferiores fertiles. Sporangia hypophylla. Sporæ rotundato-tetrahedrales.

- (6) **Coptophyllum** GARDNER in HOOKER, Icon. Pl. V tab. CDLXXVII(1842) et in HOOKER, London Journ. Bot. I 133(1842).

- (III) **Lygodiaceæ** PRESL, Suppl. Tent. Pterid. 98 (1845); FÉE, Gen. Filic. 7 (1851); Hist. Foug. & Lycopod. Antill. 125 (1866) ut *Lygodiaceæ*.

Syn. *Osmundaceæ* R. BROWN, Prodr. Fl. Nov. Holland. 161 (1810), excl. *Schizææ* et *Osmunda*; BARTLING, Ord. Nat. Pl. 18 (1830), partim; PRESL, Reliq. Hænk. I, 72 (1830), excl. *Aneimia*.

Schizæaceæ KAULFUSS, Wesen d. Farrenkr. 119 (1827), excl. *Mohria*, *Schizææ* et *Aneimia*; MARTIUS, Icon Pl. Crypt. Brasil. 112 (1828), excl. *Schizææ* et *Aneimia*; ENDLICHER, Gen. Pl. I 64 (1836), excl. *Aneimia*, *Schizææ* et *Mohria*; METTENIUS, Filic. Hort. Bot. Lips. 113(1856), partim; STURM in MARTIUS, Fl. Brasil. I pt. 2, 169(1859), excl. *Schizææ* et *Aneimia*; PRANTL, Schizæac. 58(1881), partim; CHRIST, Farnkr. 344 (1897), partim,

Schizææ HOOKER & GREVILLE, Icon. Filic. II in indice (1830), excl. *Schizææ* et *Aneimia*.

Osmundaceæ § 2. *Aneimiææ* HOOKER ex LINDLEY, Nat. Syst. Bot. 402 (1836), excl. *Aneimia* et *Schizææ*.

Filices subord. *Polypodiaceæ* trib. *Schizæaceæ* MEISNER, Pl. Vasc. Gen. I, 485 (1836), excl. *Mohria*, *Schizææ*, et *Aneimia*.

Aneimiaceæ LINK, Filic. Sp. Hort. Bot. Berol. 23 (1841), partim.

Polypodiaceæ Trib. *Schizæineæ* § 1. *Lygodiææ* MOORE, Ind. Filic. I xii (1857).

Filices subord. IV. *Osmundaceæ* Trib. 1. *Schizææ* J. SMITH, Ferns Brit. & Foreign 72 & 257 (1866), pro parte.

Filices subordo *Schizæaceæ* HOOKER & BAKER, Syn. Filic. I 428 (1868), partim.

Filices Trib. 26. *Schizææ* J. SMITH, Hist. Filic. 350 (1875), partim.

Schizæaceæ II *Lygodieæ* DIELS in ENGLER & PRANTL, Nat. Pflanzenfam. I Abt. 4, 363 (1898).

Prothallium monœicum complanatum, cum cellula apicali terminali apice cordatum. Rhizoma hypogæum repens hispidulo-nigro-barbatum, cum protostelico. Axis frondis volubilis pinnatim divisa. Pinnæ primo dichotomæ tum pinnatim decompositæ vel palmatæ. Stomata dispersa Asplenioidæa. Sporangia subsessilia semianatropa, annulo terminali, uniseriale, membrano cellularum sporangii recto. Sporæ tetrahedrales facie papilloas. Genera 4.

- | | | | |
|---|---|---|---|
| 1 | { | Segmenta foliorum 1-pinnata. Pinnulæ ex stipitibus articulatis deciduæ. Venæ dichotomæ. | |
| | | (1) Odontopteris BERNHARDI in SCHRADER, Journ. Bot. 1800 II 127 taf. II fig. 4 (1801). | |
| | | Syn. <i>Ramondia</i> MIRBEL in Bull. Soc. Philom. Paris IX, 179 (1801), excl. <i>L. flexuosum</i> . | |
| | | Segmenta frondum palmata vel dichotoma vel 2-3 pinnata. Pinnulæ cum stipitibus inarticulatæ, ita persistentes. | 2 |
| 2 | { | Segmenta frondum palmata vel dichotoma, sed fertilia sæpe dichotome pinnata. Venæ dichotomæ. | |
| | | (2) Gisopteris BERNHARDI in SCHRADER, Journ. Bot. 1800 II 128 Taf. 2 fig. 1 (1801). | |
| | | Segmenta frondum et fertilia et sterilia 2-3 pinnata. | 3 |
| 3 | { | Nervi dichotome divisi liberi. | |
| | | (3) Lygodium SWARTZ in SCHRADER, Journ. Bot. 1800 II, 106 (1801) | |
| | | Syn. <i>Ramondia</i> MIRBEL in Bull. Soc. Philom. Paris IX, 179 (1801), evel. <i>Lygodium scandens</i> . | |
| | | Nervi reticulatim anastomosi. | |
| | | (4) Lygodictyon J. SMITH ex HOOKER, Gen. Filic. t. CXI fig. B (1842). | |

In the third supplement of Index Filicum page 126, CHRISTENSEN reduced *Lygodium microstachyum* to the variety of *L. japonicum* with hesitation, denoting as (an sp. propr. ?). As a matter of fact, these two species resemble each other, and the fragmental specimen for a press are liable to make one's misunderstandings. To regard a species as a variety of the others depends wholly upon the author's view. However, *Lygodium microstachyum* is certainly a genetical unit with much more elongated, non-dissected segments of sterile leaflets resembling more to *Lygodium flexuosum*, and the segments of *Pteris multifida*. Even in the glabrescent form the sori are hispidulous. The type specimen of *Lygodium microstachyum* is in the Paris Natural History Museum which was collected in Philippine and numbered 106 by COMMERSON. One more specimen from East Indies is also in the herbarium of DESVAUX, but to what species does it belong is very doubtful (perhaps to *L. cochinchinensis*). The type of *Lygodium pubescens* KAULFUSS is also seen in Paris Museum. It was collected in Manila by CHAMISSE, and is the typical pubescent form of *L. microstachyum*. The type specimen of *Lygodium dissectum* DESVAUX consists of two specimens, one being *L. japonicum*, the other *L. microstachyum*. The following specimens are all what I have seen in the Paris Museum.

1. Philippine (COMMERSON n. 106, type of *L. microstachyum*).
2. Luzon : Montalban (A. LOHER n. 1253).
3. Luzon : Bontoc (MORICE VANOVERBERGH n. 1623).
4. Luzon : Sariaya (N.E. WHITFORD n. 549).
5. Luzon : Sablan (A.D.E. ELMER n. 6139).
6. Manila (GAUDICHAUD).
7. Manila (BARTH).
8. Manila (CHAMISSE, type of *L. pubescens* KAULFUSS).
9. Philippine (legitor ? part of *L. dissectum* in Herb. DESVAUX).
10. Mindanao : Isl. Sibuyan, Mt. Giting Giting (A.D.E. ELMER n. 12447).
11. Hongkong : Happy Valley (E. BODINIER n. 729).
12. Formosa : Tamsuy (R. OLDHAM, n. 93).
13. Formosa : Hokuto (U. FAURIE n. 234 & 616).
14. India orient. (legitor ? in Herb. DESVAUX, a doubtful species, perhaps

L. cochinchinensis).

Lygodium japonicum grows also in some parts of China, but all other localities recorded for it are incorrect. Those mistaken specimens belong either to *Lygodium tenue* BLUME (Javanian) or to *L. cochinchinensis* (Indian, Cochinchinese, and South Chinese).

小笠原島 = ふさしだト云フしだガアル。其學名ハ 1848 年 GUSTAV KUNZE (此人ハ「ライプツヒ」大學ノ教授ヲシテ 居タ羊齒植物ノ研究家デアツタ。此人ヲ日本ノ (初學者ハ OTTO KUNTZE 氏ト誤ルモノガ多イガ、全クノ別人デアリ又別時代ノ人デアルカラ注意迄ニ書) 氏ガ *Schizæa digitata* SWARTZ ト同定シテカラハ誰モ怪シムモノキ加ヘテ置ク) 氏ガ *Schizæa digitata* SWARTZ ト同定シテカラハ誰モ怪シムモノガ無カツタガ、筆者ハ豫テカラ疑ヲモツテ居タノデ調べテ見タラ *Schizæa digitata* トハ全ク異ル種類デアルコトガ判ツタ。其區別ハ次ノ様ナ點ニアル。

ふさしだ。實葉片ハ 13-30 個宛葉身ノ先ニ集束シ最モ短キモノハ長サ 8mm 最モ長キモノハ長サ 40 mm アル。幅ハ 1 mm 位ヨリナイ。囊堆ニハ假糸體 Paraphyses ガナイ (歐文欄第 2 圖)。

Schizæa digitata. 實葉片ハ 5-15 個宛葉身ノ先ニ集束シ最モ短キモノハ長サ 30 mm 最モ長キモノハ長サ 60 mm アル。幅ハ 1.5-2 mm 位アル。囊堆ニハ長イ絲狀ノ假絲體ガアル (歐文欄第 3 圖)。

元來 *Schizæa digitata* ヤふさしだハ *Schizæa intermedia* METTENIUS, *S. pennata* SWARTZ, *S. subtrijuga* MARTIUS ナドト共ニ WALLICH 氏ノ建テタ *Actinostachys* 屬ニ屬スル、筆者ハ此屬ヲふさしだ屬ト呼ブ。我邦ニハ眞ノ *Schizæa* 屬植物ハ 最近緒方正資君ガ新種トシテ發表シタかんざしわらび *Schizæa Kikuzatonis* OGATA ヨリナイ。私ハ其故此方ヲかんざしわらび屬ト呼ブ。兩屬ノ區別ハ次ノ様デアル。

ふさしだ屬 葉ハ常ニ單葉分岐ナシ。基部ハ三稜柱狀。實葉片ハ葉身ノ先ニ二列ニ集束ス。子囊ハ實葉片上ニ縦ニ四列ニ並ブ。

かんざしわらび屬 葉ハ多クハ叉狀ニ分岐シ甚シキハ團扇狀トナル。但シ *Schizæa pusilla* 系ノモノハ單葉デアルガ葉ノ基部ハ常ニ圓柱狀又ハ扁圓柱狀。實葉ハ葉身ノ先ニツキ羽狀ニ分岐シ羽片ノ表面ニ子囊ハ縦ニ二列ニ並ブ。

以上ノ様ニ屬カラシテ區別ガアリ又今迄ニ記載サレタ兩屬植物ノ何レニモ該當スルモノガナイカラ、ふさしだ屬ノ新種ト考定シテ *Actinostachys boninensis* ナル新學名ヲ與ヘル。ふさしだノ產地ハ頗ル狹ク父島ト兄島トダケデアル。

次ニふさしだ科 *Schizæaceæ* ナルモノヘハ通例カニくさヤ園藝ニ用キル *Ancimia* ナドガ加ヘテアルガ、筆者ハ LINK 氏ヤ PRESL 氏ヤ FÉE 氏ト同ジクカニ

くさ科 *Lygodiaceæ* PRESL ト「アネイミア」科 *Aneimiaceæ* LINK ヲ區別スルコトヲ主張スル。兩氏ガ分ケタ頃ハ僅カノ無性生代ノ外部形態ノミニ依ツタノデアアルガ内部形態、孢子ノ發生、氣孔ノ發生、有性生代ノ形態ヲ加ヘルト一層三科ノ區別ガ明瞭ニナルカラ以下其特徴ヲ列記シテ見ヨウ。

ふさしだ科 *Schizæaceæ* KAULFUSS, Das Wesen der Farrenkräuter 附表(119 頁=當ル) (1827 年版) (歐文欄 144 頁第 4 圖參照)。

(有性生代) 孢子ハ歪長橢圓形、左右相稱、背面ニ細カキ多數ノ縱線アリ。原葉體ハ雌雄異株、糸狀、所々ニ菌糸ヲ有スル球狀體ヲ有ス。

(無性生代) 匍枝ハ地上生短ク匍ヒ又ハ直立シ内ニ圓柱狀中心柱 (Protostele) 又ハ不完全ナル管狀中心柱 (Imperfect solenostele) ヲ有ス、葉柄ハ三稜柱狀又ハ圓柱狀、葉身ハ單葉又ハ叉狀ニ幾回モ分岐ス。氣孔ノ發生ハとらのをしだ型、實葉ハ羽狀ナルトキハ裂片上ニ二列ニ並ブ、子囊ヲ有シ、集束スルトキハ裂片上ニ四列ニ並ブ子囊ヲ有ス。子囊ハ無柄直立シ先端ニ一列ノ環帶アリ、子囊壁ノ細胞ハ電光狀波狀ノ境ニテ相接ス、孢子母細胞ハ二ツ宛逐次ニ分裂ス。

本科ニハふさしだ屬トかんざしわらび屬トガ隸屬スル其區別ハ前記ノ通りデアル。

「アネイミア」科 *Aneimiaceæ* LINK, Filicum Species in Horto Botanico Berolinensi cultæ, 23 頁 (1841 年版)

(有性生代)、孢子ハ四面體表面ニ太キ筋アリ。原葉體ハ雌雄同株、生長點ハ先端ニ近キ側方ニアル爲メ原葉體ハ橢圓形ニ發達ス。

(無性生代) 匍枝ハ地上生、匍フモノト立ツモノトアリ内ニ網狀中心柱 (Dictyostele) 又ハ完全ナル管狀中心柱 (Perfect solenostele) アリ。葉ハ立チ通例羽狀又ハ複羽狀ニ分岐スレドモ稀ニ單葉トナル。氣孔ノ發生ハ *Aneimia* 型、子囊ハ無柄、環帶ハ 1-2 列、子囊壁ノ細胞ハ多角形ノ境ニテ相接ス、孢子母細胞ハ同時ニ四分孢子トナル。

本科ニハ次ノ六屬ガアル。

- | | | |
|---|---|---|
| 1 | { | 葉ハ單葉、ばら模葉型ニ出ヅ、鋸齒又ハ羽狀ノ缺刻アリ。葉脈ハ叉狀ニ分岐ス。莖ハ直立ス、孢子ハ葉裏ノ葉脈上ニ生ジ殊ニ葉ノ基部ニ多シ、子囊ハ卵形、孢子ハ稜角アル四角體……………「トロコプテリス」屬 <i>Trochopteris</i> GARDNER |
| | | 葉ハ單複ノ羽狀葉、實葉ト裸葉トハ同型又ハ異型……………2 |
| 2 | { | 莖ハ直立シ網狀中心柱ヲ有ス。子囊ハ球形、葉裏ノ葉脈上又ハ葉縁ノ外卷スル部分ノ葉脈上ニ生ズ、孢子ハ丸キ四面體、葉ハ複羽狀、葉脈ハ叉狀ニ分岐シテ後羽狀トナル。……………「モーリア」屬 <i>Mohria</i> SWARTZ |

- 莖ハ地上ヲ匍ヒ管狀中心柱ヲ有ス。子囊ハ橢圓形又ハ卵形、胞子ハ稜角アル四面體又ハ丸キ四面體……………3
- 3 { 實葉ハ裸葉ノ基部ニシテ葉柄ノ先端ニ一対宛出デ 1-3 回羽狀ニ分岐ス。裸葉ハ 1-2 回羽狀複葉、胞子ハ稜角アル四面體……………4
- 3 { 實葉ト裸葉トハ異型又ハ葉ノ基部ノ羽片ガ實葉片トナル。……………5
- 4 { 葉脈ハ又狀ニ分岐ス、葉ハ 1-2 回羽狀ニ分岐ス……「アネイミア」屬 *Aneimia* SWARTZ
- 4 { 葉脈ハ網狀ヲナス。葉ハ 1 回羽狀ニ分岐ス」……………「アネミデクチオン」屬 *Anemidictyon* J. SMITH.
- 5 { 葉ハあをがねしだ狀ノ複羽狀葉ニシテ最基部ノ羽片ノミガ實葉片トナル。葉脈ハ羽狀、胞子ハ稜角アル四角體、……………「アネミエーボトリス」屬 *Anemiæbotrys* FÉE
- 5 { 葉ハ毛髮様ニ細キ裂片ヲ有シ 3-3 回複羽狀ニ分岐シ實葉ト裸葉トノ別アルカ又ハ基部ノ裂片ガ實葉片トナル。胞子ハ丸キ四面體……………「コプトフィルム」屬 *Coptophyllum* GARDNER

かにくさ科 *Lygodiaceae* PRESL, Supplementum Tentaminis Pteridographiae 98 頁 (1845 年版)

(有性世代) 胞子ハ四面體ニシテ表面ニ小サキ粒狀ノ突起アリ、原葉體ハ雌雄同様扁平ニシテ、先端中央ニ生長點アル故先端部ハ心臟形ニ發達ス。

(無性世代) 莖ハ地中ヲ匍ヒ黑色ノ剛毛アリ、内ニ圓柱狀中心柱ヲ有ス。葉軸ハ外物ニ卷キ附キ其ヨリ羽片ヲ生ズ、羽片ハ掌狀ニ分叉スルカ又狀ニ分岐スルカ、一旦二ツニ分レ更ニ其各ガ羽狀ニ分岐ス、氣孔ノ發生ハとらのをしだ型、子囊ハ短キ柄ノ先ニ横ニツキ一端ニ一列ノ環帶アリ、子囊壁ノ細胞ハ眞直ナル境ニテ相接ス。

本科ニハ次ノ四屬ガアル。

- 1 { 葉片ハ一回羽狀ニ分岐シ羽片ハ小葉柄ト關節スル故脱落ス。葉脈ハ又狀ニ分岐ス。……………しやみせんづる屬 *Odontopteris* BERNHARDI
- 1 { 葉身ハ掌狀又ハ羽狀ニ分叉又ハ分岐スレドモ葉柄又ハ小葉柄ト關節セズ……………2
- 2 { 葉身ハ掌狀ニ分裂スルカ又ハ又狀ニ分岐ス、實葉ハ屢々又狀ニ分岐シタル後更ニ羽狀ニ分岐ス。……………しまかにくさ屬 *Gisopteris* BERNHARDI
- 2 { 葉身ハ 2-8 回羽狀ニ分岐ス。……………3
- 3 { 葉脈ハ又狀ニ分岐シ先端離生、……………かにくさ屬 *Lygodium* SWARTZ
- 3 { 葉脈ハ網狀ヲナス、……………「リゴデクチオン」屬 *Lygodictyon* J. SMITH.

本稿ヲ終ルニ當リ珍植物 *Schizaea Kikuzatonis* ノ標本ヲ分與サレタ緒方正資氏ニ深謝ス、尙ホ氏ハ其標本ノ一部ヲ CHRISTENSEN 氏ニ送りシ所、氏ヨリ 'This is not rare Malayan form of *Schizaea dichotoma* first described as *S. Biroi* RICHTER' ト申越セシ由、然シ CHRISTENSEN 氏ノ Index Filicum 並ニ其

Supplementum I, II, III 全部ヲ見テモ其様ナ名ハ載ツテ居ナイ、其故 CHRISTENSEN 氏ニ問合中デアルカラ氏カラ同答ヲ得テ又記スコトスルガ、然シ *Schizaea dichotoma* トハ大サモ異リ rhizome ハ立チ sterile frond ヲ伴ハヌシ 到底同一視スルコトハ出来ヌデアラウ。

Morphologisch-biologische Studien über die Gattung *Mitrastemon* (VII)

von

KIYOHICO WATANABE

渡邊清彦： やつこさう屬ノ形態學的並ニ生態學的研究（其七）

XIX. Zusammenfassung.

1. *Mitrastemon Yamamotoi* und *M. Kanehirai* sind mittels der Übergangsformen in einer Reihe verbunden. Diese Reihe hat in der Nordgrenze die Blattpaare 3 oder 4, in der Südgrenze 12 oder 13. Diese Blattpaare vermehren sich desto mehr, je südlicher der Fundort wird.

2. Aber der heutigen Neigung der Systematik zufolge möchte ich vorschlagen, die Kategorie von *M. Kanehirai* zu erweitern und etwa den Formen von *M. Yamamotoi* mit mehr als 6 Blattpaaren, so die Formen mit 7–13 Blattpaaren (die Formen südlich von Amami-Ōshima) als *M. Kanehirai* anzusehen.

3. Zwischen *M. Kawa-Sasakii* und der Reihe von *M. Yamamotoi*—*M. Kanehirai* sind keine Übergangsformen zu finden, obgleich *M. Yamamotoi* und *M. Kawa-Sasakii* die gleiche Chromosomenzahl 20 in Haploide zeigen.

4. Mit der Verminderung der Blattpaare vermehrt sich die Neigung, die Perigonröhre zu vier-blättrigen Blütenhüllen umzuwandeln.

5. Falls das Ende einer 5–10 cm unter der Bodenoberfläche verlaufenden Wirtswurzel mit dem *Mitrastemon*-Samen in Berührung kommt, entsteht die Infektion. Hat einmal die Infektion angefangen, läuft die Wirtswurzel, sich dichotomisch-radial verzweigend, horizontal dicht unter der Bodenoberfläche.